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RETURN SEASONALITY – JANUARY EFFECT. STUDY CASE: THE BUCHAREST STOCK EXCHANGE

Abstract. *The paper examines the excess return present on Bucharest Stock Exchange (BSE). There are highlighted the presence of January effect and the effect seasonality. The January effect presumes higher average returns in January in comparison with the average returns for the rest of the year's months, in direct correlation with company size and shares' price volatility.*

The January effect is related in scientific studies with the company's size, and because of the BSE reduce liquidity we also consider the volume of shares traded. The paper analyzes the BSE shares' excess returns obtained between 2002 and 2010 and highlights the influence of the companies' size and traded shares volumes on the shares' excess returns after excluding the risk-adjusted expected returns.

In the end of the paper we discuss aspects related to the influence of financial crises on the excess return and the possible causes of January effect.

Key words*: January effect, company size effect, excess return, returns seasonality, traded shares volume, risk-adjusted expected returns.*

JEL Classification: G12
REL Code: **11F**

1. INTRODUCTION

The present paper examines the excess returns present on Bucharest Stock Exchange (BSE) and realises an empirical study of the excess returns' seasonality. The January effect is a phenomenon present on mature stock exchanges, manifested by higher excess returns in January, a possible cause being the increase in demand in the first month of the year as a result of the disinvestment process with loses from the end of the previous year under the intention to reduce the taxable income.

The January effect is part of an extend number of effects evidencing higher returns for shares in some specific year's periods such as the effect of the first half of the month, the week-end effect or effects resulting from the company's features like the size effect.

We highlight the presence of January effect on BSE and study the effect seasonality. We show that the market presents an excess return in January, but abnormal returns are also manifested in April and May, probably following publication of companies' financial situations and announcement of dividend payments.

Another studied issue is the effect of companies' size on the excess returns. We consider the company size by two aspects: capitalization and volume of traded shares as a specific feature of the BSE reduce liquidity.

We use the denomination of excess return for additional return obtained on a period in comparison with the risk-adjusted expected return considering the company size and the liquidity of transactions made with shares.

The paper analyzes the returns obtain over the period 2002 to 2010 on BSE, using the closing daily prices for shares included in portfolios, aggregated over various periods of time according with the research needs.

After the review of speciality papers published at national and international level, we split data in portfolios using two criteria: companies' capitalisation and liquidity of trading with companies' shares measured by transactions volume. Analyzing the excess returns observed after excluding the risk-adjusted expected returns, we highlight the January effect and it's manifestation over time. In the end of the paper we discuss aspects related to the influence of financial crises that began in 2008 over the excess return and the possible causes that induce the January effect.

2. SCIENTIFIC LITERATURE REVIEW

The study of effects that determine excess of returns represents a capital concerning for specialists due to the fact that all these effects manifest as exceptions from the Fama's Efficient Market Hypotheses (EMH). The weak form of market efficiency presumes that the market is efficient regarding the previous prices and there cannot be obtained higher returns from forecasts regarding the future evolution of an asset price based on information from the previous period without taking any additional risk. Existence of return seasonality based on calendar effects is contrary to EMH and suggest market inefficiency, investors being able to obtain in specific year's periods higher returns without any additional risk.

Keim (1983) shows that a large part of the year return is due to January effect and especially to the excess return obtained in the first days of trading in January; the relation between the company size and the excess return being negative. Horowitz, Loughran and Savin (1996) are consistent with the existence of January effect – the existence of higher average return in January in comparison with the average returns for the rest of the year's months, but their paper does not support the negative relation between the excess return in January and the company's size.

The most frequently used explanation regarding the existence of January effect is the disinvestment from previous year December of the funds invested in shares at lower prices in order to diminish the taxable income (tax-loss selling at the end of the tax year), supported by Reinganum (1983) and Roll (1983). But the January effect is not always determined by taxes, Balaban (1995) shows, for the market studied in his paper, that the lack of taxation of income from stock exchange transactions does not make the effect disappear, and that the effect is not preceded by a decrease in the previous December returns – in December there should have been a large number of sales with losses.

Other possible causes can be the yearly rebalancing of portfolios, publication of company financial situation or disinvestment of financial resources invested on stock market in order to pay other debts (Balaban 1995). Bepari (2009) identifies on some emerging capital markets the existence of the April effect due to large number of sales of shares after the dividend payments are established and the August effect as result of some economic or natural phenomenon like floods that determine reduce of economic activities for the affected areas.

Since the liberalisation of markets there are more and more studies based on data from emerging countries. Pandey (2002) describes the January effect in India and the existence of capital market inefficiency.

Couple of studies determines the existence, on some markets, of excess returns for other months also, while studies made on markets where the fiscal year does not end on December added to January effect the connotation of fiscal year end effect.

The level of returns registered in January constitutes in many cases an index for the shares' price evolution for the year that just begins. A study made by Innovative Quant Solutions (2010) shows that the direction of January return determine the direction of year return in 80% of the cases, and the returns from the first half of the year follow the trend set in January but the returns for the second part of the year are independent of the January returns dynamic.

The January effect is not a general applicable rule, but more of a generalization with annual variation; "…January was a weak month in both 2008 and 2009 … But despite the ubiquity of January effect analysis, and the temptation to trust the pattern, investors should be wary of this kind of prognosticating … And history is packed with examples where January's performance was highly misleading about things to come" (Kumar 2010).

The January effect is a subject treated in the finance from several points of view such as anomaly of the capital market efficiency, as influence over the investment decision and also as a result of the investor behavior in making decisions.

3. DATA USED WITHIN THE PAPER

Data used for testing the January effect on Bucharest Stock Exchange are the daily closing prices for common shares; trades realized on the Regular section of BSE between January 2002 and December 2010. BSE has also other section for trading shares, that have distorted shares' price due to their specificity – in the Odd market there are traded shares that are in quantities not multiple of the standard block and in the Deal market the price is established through negotiation between seller and buyer and not formed on the market on bases of demand and offer.

The company size is measured through two elements: capitalization and volume of traded shares on the market. The capitalization is considered at the closing price from the last trading day of the year multiplied by number of shares issued by company and still valid at the end of the year, and is considered as entry data for the following year. Because of reduce liquidity of BSE and concentration of trades on shares of a few companies (see Geambaşu, Stancu 2010), the stock exchange capitalization is not necessary relevant. For that, we introduce a new criterion in selecting shares and form portfolios – the volume of shares traded annually for each company as entry data for configuring portfolios for the following year.

Data from this point forward were computed using SAS Enterprise Guide and Microsoft Office Excel 2003.

3.1 Portfolios configuration

Based on selected data, we form five portfolios for each of the two criteria –capitalization and annual volume of shares traded for each company. The capitalization of a share is considered based on data from the last trading day of the previous year.

The portfolios will be annually computed, before de first trading day of the year, based on capitalization or volume of trading from the previous year and remain unchanged over the year.

Also, because of concentration of trading on a few domains of activity – financial, banks, energy – we count for the activity domain of the company, in order to determine if it has or not an influence over the January effect. It is possible that the January effect to be influenced based on the position of the company in one or another economic domain.

Boudreaux (1995) shows that the return seasonality can be better analyze through portfolios and not by shares considered independent.

3.2 Company size – influencing the risk adjustment

Roll (1981) and Keim (1983) consider a risk generated by the company size. The average return can be higher for small companies due to inclusion in their shares' price evaluation of a premium for risk assumed by trading these shares due to the lack of liquidity – reduce or lack of trading for these shares for a period of time. The premium for risk can be maintained in the excess return for small companies' shares if there is used only one beta for all shares.

Some papers argument that beta of small companies differ from beta of large companies because of trading infrequently and in reduce volumes the small companies' shares, inducing a risk premium for small companies shares return. Considering the BSE we will count also the criteria of volume of shares traded, for BSE there is no direct connection between company size and the number of shares traded.

Reingnum (1983) develops the idea and shows that by using an adjusted beta proper to each portfolio according to the companies' size does not diminish the negative relation between the excess return and the company size. In order to solve this issue, Keim (1983) computes a beta for each portfolio. If small companies share have included in their price evaluation a risk premium, their beta should be larger than for large companies. After computing a beta for each portfolio based on companies' size and excluding the risk premium, the excess return for all portfolios must be similar. This is the manner used to determine the excess return – considering risk-adjusted beta for each portfolio.

Keim (1983) arguments, using three distinct computing methods for beta, that the negative relation between excess return and company size is maintained. His study shows that even if beta for small companies is higher then beta of large companies, this is not sufficient to compensate the higher excess returns of small companies in compare with the average return of weighted market portfolio.

3.3 Computing beta for each portfolio

Data used to create portfolios are the closing prices from section Regular for the companies listed on BSE for a period of nine years between 2002 and 2010. For each year there will be used data for the companies that in the previous year had quotations and are still listed for the considered year. So, every year companies forming the portfolios may vary, depending on their listing or delisting from the BSE quota. The number of companies included yearly in portfolios varies between 50 and 72, more than 125.500 closing prices in an interval of almost 2900 days of quotation.

Portfolios will be reconfigured annually, based on the two criteria – capitalization computed at the end of the previous year and the trading volumes from the previous year. The capitalization is computed based on the number of shares issued by each company valid at the end for the previous year multiplied with the closing price of the shares from the last trading day of the previous year. The trading volume is calculating by adding the number of shares traded daily on the previous year.

After determining for each company the capitalization and the traded volume, we order the companies independent on each of the two criteria and establish for each criteria five portfolios: the first portfolio having the companies that register the minimum values related to the criteria consider for forming the portfolio (small companies based on the considered criteria) and the fifth portfolio formed of companies that register the highest values for the criteria used to form the portfolio.

For companies that were listed first time during the previous year, there will be considered only those that were quoted at least for two month during the previous year (minimum 40 days) in order to reduce the influence of over-evaluation of shares prices that usually accompanies the listing of new companies on BSE.

Varying yearly, each portfolio has between 10 and 14 companies, with an average of 12 companies included. Due to the variation in the number of companies listed on BSE during each year and the criterion that companies must have at least 40 days of quotation in the previous year, the last portfolio may have one or two companies more or less than the average number of companies included in a portfolio.

In order to count for the implication of the economic activity domain in which the company activates, considering the reduce liquidity of BSE and the investors orientation for investing in companies from specific domains of activity (see Geambaşu and Stancu 2010), we shall compute beta for portfolios formed of companies in the same domain of activity and listed on BSE.

We shall name the created portfolios according to the three criteria: with Pcb1 to Pcb5 for portfolios created using the criteria of capitalization (Pcb1 is formed from companies with lowest capitalization and Pcb5 from companies with highest capitalization), with Pv1 to Pv5 the portfolios created according to the trading volume criteria (Pv1 includes companies with the lowest trade volumes and Pv5 the companies with highest trade volume register in the previous year). The portfolios create according to activity domain will be noted with Pd1 to Pd7 (where 1 is the construction domain, 2 – energy including also oil companies and utility companies, 3 – raw material, 4 – industry, 5 – medical, 6 – financial and banks, 7 – other domains). Portfolios created based on the companies belonging to an economic activity domain have between 4 and 17 companies, depending on the activity domain and on listing or delisting the companies from the BSE quota.

The market return is measured through the daily value of index BET. The equally weighted portfolios of shares will be compared with the market portfolio in order to determine beta and the excess return of portfolio. The daily risk-adjusted return of each portfolio is compared against the daily market return; the difference represents the daily excess return for each portfolio. The portfolio structure is reconfigured before every year starts. The results are presented in Table 1.a for portfolios made on capitalization criteria, in Table 1.b for portfolios made on trading volume criteria and in Table 1.c for portfolios made on economic activity domain. There are also included, beside the average daily excess return, information regarding the standard deviation, beta, first order autocorrelation and Student t-test values.

Table 1.a

Average daily excess return for the five portfolios created based on capitalisation criteria using daily closing quotations from BSE in period 2002 – 2010

-average daily excess return, standard deviation, beta, first order autocorrelation, Student t-

Portfolio	Pcb				
	Average daily excess return	**Standard deviation**	**Beta**	**First order autocorrelation**	**Student T-test**
1	0.3624%	4.1447 %	0.5266	-0.0152	4.13
2	0.1766%	2.0982 %	0.5639	-0.0008	3.98
3	0.1002%	1.8014 %	0.6734	0.0249	2.63
4	0.0604%	1.5325 %	0.7539	0.0454	1.86
5	0.0384%	1.4553 %	0.9109	0.0305	1.25

Table 1.b

Average daily excess return for the five portfolios created based on trading volume criteria using daily closing quotations from BSE in period 2002 – 2010

-average daily excess return, standard deviation, beta, first order autocorrelation, Student t-

Portfolio	Pv				
	Average daily excess return	**Standard deviation**	**Beta**	**First order autocorrelation**	**Student T-test**
1	0.5312%	7.0952%	0.4286	-0,0132	3.54
2	0.2235%	2.5220%	0.5334	-0,0143	4.38
3	0.0852%	1.8312%	0.5624	-0,0190	2.20
4	0.0673%	1.3419%	0.7637	0,0976	2.37
5	0.0297%	1.2560%	0.9921	0,0480	1.12

Table 1.c

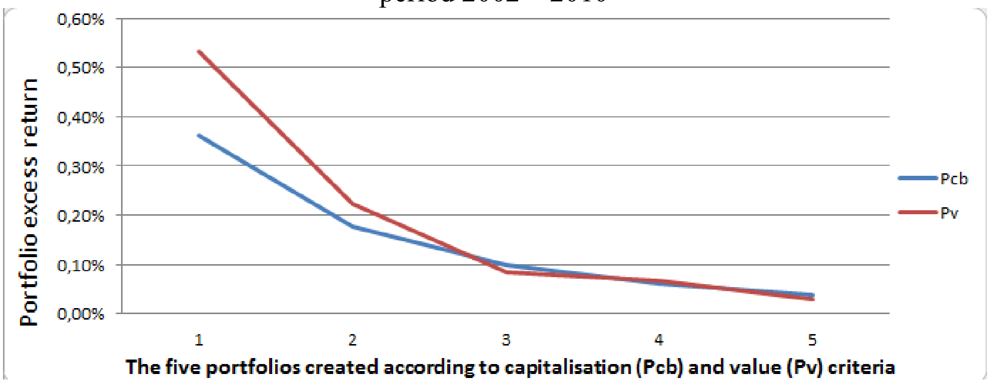
Average daily excess return for the seven portfolios created based on activity domain criteria using daily closing quotations from BSE in period 2002 – 2010

-average daily excess return, standard deviation, beta, first order autocorrelation, Student t-

Portfolio	Pd				
	Average daily excess return	Standard deviation	Beta	First order autocorrelation	Student T-test
1	0.6743%	9.5748 %	0.6199	0.0147	3.33
2	0.1146%	1.9415%	0.7974	0.0049	2.79
3	0.1346%	2.1772%	0.6996	0.0552	2.92
4	0.0913%	1.7513%	0.6115	0.0197	2.46
5	0.2124%	3.5357%	0.6567	-0.0072	2.84
6	0.0549%	1.5759%	1.0041	0.0623	1.65
7	0.1547%	2.5923%	0.4887	-0.0634	2.82

Figure 1

Decreasing of the average daily excess return function of company size and trading volume for the five portfolios created for each of the two methods: capitalisation (Pcb) and trading volume (Pv) criteria using daily closing quotations on BSE, period 2002 – 2010



The average daily excess return is a decreasing function of company size and trading volume, and the result is consistent with the results from studies made on American market (see Keim (1983), Roll (1981), Reinganum (1983)), no matter the criteria used for constituting the portfolio – capitalization or annual trading volume. The annually excess return obtain by the first portfolio (Pcb: 89.88% = 0.3624% * 248 average number of trading days in a year, Pv: 131.74% = 0.5312% * 248) compared with the return of the fifth portfolio (Pcb: 9.52% = 0.0384% * 248, Pv: 7.37% = 0.0297% * 248) is much higher. The return of the first portfolio, no matter the criteria chosen for creating the portfolio, is almost ten times higher than the return of portfolio five and at least double than the return of the second portfolio. The risk associated to the portfolios (measured through the standard deviation) is in direct correlation with the excess return.

The impact of market evolution on portfolios evolution is different, being higher for portfolio 1 and reduce for portfolio 5. The excess returns of portfolios are in reverse correlation with beta, as the excess return is higher the risk is higher and the correlation with the market is lower. The trading volume criterion shows that a company that is traded frequently has a lower excess return. At the opposite pole, for a company traded infrequently it can be obtained higher excess return.

The first order autocorrelation is negative for portfolios formed of small or infrequently traded companies (see first and second portfolios from Pcb and Pv) and positive in case of portfolio four and five of both criteria Pcb and Pv. This situation differs from the results obtained in the international papers, that argument that the small companies have higher autocorrelation than larger companies.

Portfolios created having as criteria the economic activity domain show an excess return for some domains (portfolios 1 – constructions and 5 – medicine) and also the standard deviation of these portfolios is higher than for the rest of the portfolios. At the opposite side regarding the excess return there are the financial and industry domains, having also the lowest standard deviation. Remark the high beta coefficient especially for the financial domain. First order autocorrelation is both negative and positive, but the values are reduced. One can argument that excess return is influenced by the economic activity domain of the company, but the excess return obtained is always in relation with a higher risk.

4. Seasonality of excess return

In this section we study the excess return seasonality, considering the way it manifests monthly each year. The scientific international literature in this domain consider that the majority of excess return is registered in the first month of an year, and some studies shows its concentrations in the first weak or even first day of trading in the January of each year. The excess return concentrated annually in a single month sustain the information inefficiency of the capital market, providing opportunity for informed investors to obtain higher returns without taking any supplementary risk.

The random walk model is frequently invoked for describing the evolution of shares return and sustain that portfolio return distribution is not dependent of time. Empirical evidences from various studies showed that the return distribution is conditioned by time, being larger in some months, depending on the specific of studied market. The most known calendar effect is the January effect, but there are also evidences from studying the emergent markets that this effect exists as effect of the first month from a financial year (for economy where the financial year does not end in December) and also there are effects manifested in other months.

For testing the seasonality of return excess we use the following model:

$$R_{t(m)}^{p} = f_1(\mu_t^p, \lambda_m^p) = \mu_t^p + \lambda_m^p + \varepsilon_t \qquad (1)$$

where $R_{t(m)}^{p}$ represents the portfolio p return for day t from the month m and depends on μ_t^p the expected return of portfolio p for day t and λ_m^p the average daily excess return of portfolio p for the month m; ε_t represents the residual with zero average. The expected return of the portfolio p for day t is $\mu_t^p = E(R_t^p | I_{t-1})$ depending on information available in the previous period and is a function of beta and of the market return for day t: $\mu_t^p = f_2(\beta^p, R_{M,t})$. So, daily return of portfolio is a function depending on market return, risk and average daily excess return for a month:

$$R_{t(m)}^p = \mu_t^p + \lambda_m^p + \varepsilon_t = f_3(\beta^p, R_{M,t}, \lambda_m^p | I_{t-1}) \qquad (2)$$

The average daily return for a portfolio for month m is resulting from weighting the results from the equation of daily return and has the equation

$$R_m^p = \frac{1}{n}\sum_{t \in m} R_{t(m)}^p = \mu^p + \lambda_m^p \qquad (3)$$

Studies like those of Keim (1983) and Rozeff and Kinney (1976) shows that on mature markets the January effect manifests and is more powerful for portfolios formed from small companies, while for portfolios formed of large companies the tested hypothesis of stability of return in time cannot be rejected.

Figure 2.a

Evolution of the average daily excess return for Pcb portfolios for each month

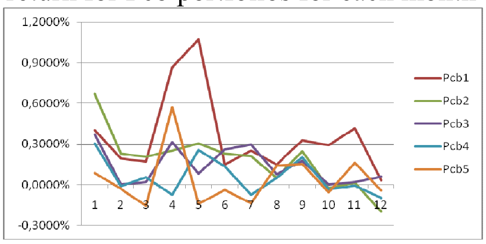
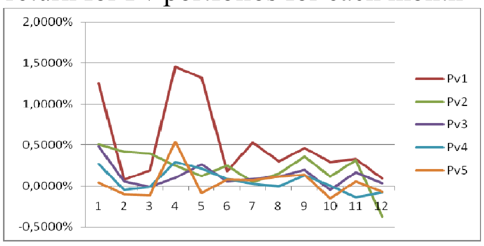


Figure 2.b

Evolution of the average daily excess return for Pv portfolios for each month



No matter the method of realising the portfolios – capitalization or trading volume, the excess return have the same distribution. In addition, the extreme portfolios (portfolios 1 and 5 from each criterion) have excess return also in April and May, although the fiscal year in Romania ends at December 31 (see figures 2.a and 2.b). Tables 2.a and 2.b present for the two extreme portfolios for both methods of computing portfolios other months with excess return higher than the return of January.

Table 2.a

Evolution of the average daily excess return for portfolios Pcb for each month (t-statistic in brackets)

Month / Portfolio	1	2	3	4	5	6	7	8	9	10	11	12
Pcb1	0.4063% (2.17)	0.1965% (0.99)	0.1765% (1.04)	0.9223% (1.87)	1.1201% (1.51)	0.1856% (1.22)	0.3790% (2.25)	0.1226% (0.82)	0.3459% (2.10)	0.3397% (1.43)	0.3623% (2.06)	-0.3299% (-1.58)
Pcb2	0.6546% (3.70)	0.2303% (1.34)	0.2225% (1.32)	0.2341% (1.13)	0.3133% (1.87)	0.2679% (1.89)	0.2182% (1.72)	-0.0502% (-0.42)	0.2702% (2.05)	-0.0021% (-0.02)	-0.1054% (-0.74)	-0.1837% (-1.41)
Pcb3	0.3655% (2.73)	0.0008% (0.01)	0.0279% (0.20)	0.3020% (1.42)	0.0809% (0.60)	0.1416% (1.15)	0.2960% (2.52)	0.0581% (0.56)	0.1217% (1.14)	-0.0496% (-0.40)	-0.0745% (-0.66)	-0.0987% (-0.84)
Pcb4	0.3058% (2.75)	-0.0130% (-0.12)	0.0599% (0.48)	-0.0812% (-0.69)	0.2586% (1.92)	0.1131% (1.21)	-0.0602% (-0.63)	0.0455% (0.54)	0.2260% (1.99)	-0.0605% (-0.48)	-0.0098% (-0.09)	-0.0830% (-0.71)
Pcb5	0.0888% (0.80)	-0.0255% (-0.26)	-0.1582% (-0.91)	0.5688% (4.61)	-0.1338% (-1.35)	0.0113% (0.13)	-0.1085% (-1.23)	0.1138% (1.67)	0.1110% (1.30)	-0.0785% (-0.84)	0.1423% (1.49)	-0.0597% (-0.55)

Tables 2.b

Evolution of the average daily excess return for portfolios Pv for each month (t-statistic in brackets)

Month / Portfolio	1	2	3	4	5	6	7	8	9	10	11	12
Pv1	1.1744% (3.52)	0.0797% (0.29)	0.1988% (0.90)	1.5403% (1.37)	1.3826% (1.18)	0.3110% (1.22)	0.4636% (1.91)	0.1697% (0.91)	0.3828% (1.55)	0.3484% (1.02)	0.2977% (1.34)	0.0140% (0.05)
Pv2	0.5002% (2.94)	0.4168% (2.26)	0.3901% (1.78)	0.2378% (1.08)	0.1420% (0.61)	0.2423% (1.52)	0.1746% (1.09)	0.1426% (1.16)	0.4151% (2.51)	0.0793% (0.45)	0.2740% (1.49)	-0.3445% (-1.70)
Pv3	0.4807% (3.05)	0.0586% (0.43)	-0.0027% (-0.02)	0.1036% (0.58)	0.2658% (1.97)	0.0601% (0.51)	0.0706% (0.58)	-0.0411% (-0.34)	0.2297% (1.92)	-0.0584% (-0.49)	0.0278% (0.24)	-0.2164% (-1.72)
Pv4	0.2668% (2.75)	-0.0472% (-0.52)	-0.0004% (0.00)	0.2742% (2.05)	0.2061% (1.53)	0.0666% (0.92)	0.1163% (1.44)	0.0461% (0.74)	0.1213% (1.36)	-0.0083% (-0.09)	-0.1682% (-2.29)	-0.0806% (-0.87)
Pv5	0.0489% (0.52)	-0.0957% (-1.03)	-0.1130% (-0.92)	0.5481% (4.35)	-0.0830% (-0.92)	0.0677% (0.84)	0.0277% (0.42)	0.0607% (0.97)	0.1344% (1.74)	-0.1973% (-2.26)	0.0359% (0.46)	-0.0725% (-0.70)

Tables 2.a and 2.b present excess returns in April and May higher than the excess return of January. Months April and May represents picks for excess returns, presenting values higher than the rest of the months. Interesting is that no matter the criteria used for creating portfolios the results are similar – for all portfolios there are obtained maximum excess return in January and for extreme portfolios we have higher excess returns also in April and in May.

Also to be noted for all portfolios from both criteria is the negative or minimum excess return in December. Considering the negative or minimum excess return in December and the high excess return in January there can be supported the presence of January effect. For extreme portfolios can also be consider the effect manifested after the publication of financial situations; usually in Romania the publication of final financial situation for the previous year is done in latter March or early April.

If we consider the average daily excess return of each portfolio for January as 100%, then the average daily excess returns for the rest of the months are as presented in tables 3.a and 3.b. The results obtained sustain the previous results - the extreme portfolios 1 and 5 from each criterion have excess return also in April and May.

Figure 3.a

Evolution of the average daily excess return for each month for Pcb portfolios

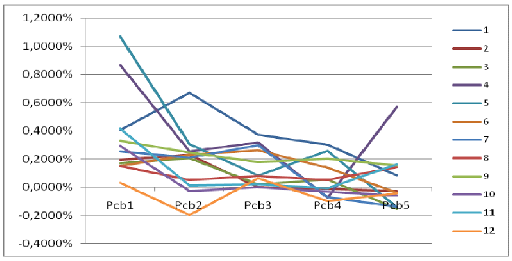


Figure 3.b

Evolution of the average daily excess return for each month for Pv portfolios

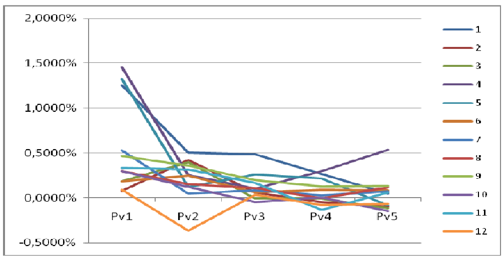


Table 3.a*

Evolution of the average daily excess returns for each month compared to January average daily excess return for criteria Pcb used to compute portfolios

Month / Portfolio	1	2	3	4	5	6	7	8	9	10	11	12
Pcb1	100%	48%	43%	227%	276%	46%	93%	30%	85%	84%	89%	-81%
Pcb2	100%	35%	34%	36%	48%	41%	33%	-8%	41%	0%	-16%	-28%
Pcb3	100%	0%	8%	83%	22%	39%	81%	16%	33%	-14%	-20%	-27%
Pcb4	100%	-4%	20%	-27%	85%	37%	-20%	15%	74%	-20%	-3%	-27%
Pcb5	100%	-29%	-178%	641%	-151%	13%	-122%	128%	125%	-88%	160%	-67%

Table 3.b*

Evolution of the average daily excess returns for each month compared to January average daily excess return for criteria Pv used to compute portfolios

Month / Portfolio	1	2	3	4	5	6	7	8	9	10	11	12
Pv1	100%	7%	17%	131%	118%	26%	39%	14%	33%	30%	25%	1%
Pv2	100%	83%	78%	48%	28%	48%	35%	29%	83%	16%	55%	-69%
Pv3	100%	12%	-1%	22%	55%	13%	15%	-9%	48%	-12%	6%	-45%
Pv4	100%	-18%	0%	103%	77%	25%	44%	17%	45%	-3%	-63%	-30%
Pv5	100%	-196%	-231%	1121%	-170%	139%	57%	124%	275%	-404%	73%	-148%

* Average daily excess returns for each month compared to January average daily excess return were obtained by dividing the average daily excess return of each month from Tables 2.a & 2.b to January average daily excess return for each portfolio: $R_m^p\% = R_{m\in(1,12)}^p / R_{m=1}^p$

Tables 3.a and 3.b present excess returns in April and May higher than the excess return of January for the extreme portfolios 1 and 5, for both methods of computing data. Also, the excess return in December is negative for all portfolios and for both criteria; the fact can be consider in support of the presence of the January effect.

We can consider the average daily excess return of the first portfolio for both criteria of computing data as, then the average daily excess returns for the rest of the portfolio have lower average daily excess returns and it decrease with the increase of the size of the companies forming the portfolios, as presented in tables 4.a and 4.b.

Table 4.a**

Evolution of the average daily excess returns for each portfolio compared to the first portfolio average daily excess return for each month for criteria Pcb used to compute portfolios

Month / Portfolio	1	2	3	4	5	6	7	8	9	10	11	12
Pcb1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Pcb2	161%	117%	126%	25%	28%	144%	58%	-41%	78%	-1%	-29%	56%
Pcb3	90%	0%	16%	33%	7%	76%	78%	47%	35%	-15%	-21%	30%
Pcb4	75%	-7%	34%	-9%	23%	61%	-16%	37%	65%	-18%	-3%	25%
Pcb5	22%	-13%	-90%	62%	-12%	6%	-29%	93%	32%	-23%	39%	18%

Table 4.b**

Evolution of the average daily excess returns for each portfolio compared to the first portfolio average daily excess return for each month for criteria Pv used to compute portfolios

Month / Portfolio	1	2	3	4	5	6	7	8	9	10	11	12
Pv1	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Pv2	43%	523%	196%	15%	10%	78%	38%	84%	108%	23%	92%	-2457%
Pv3	41%	74%	-1%	7%	19%	19%	15%	-24%	60%	-17%	9%	-1543%
Pv4	23%	-59%	0%	18%	15%	21%	25%	27%	32%	-2%	-57%	-575%
Pv5	4%	-120%	-57%	36%	-6%	22%	6%	36%	35%	-57%	12%	-517%

** Average daily excess returns for each portfolio compared to the first portfolio average daily excess return were obtained by dividing the average daily excess returns for each portfolio from Tables 2.a & 2.b to the first portfolio average daily excess return for each month: $R_m^p\% = R_m^{p\in(1,5)} / R_m^{p=1}$

A conclusion till this point of the paper is that exists an excess return higher for the first portfolio for both the criteria used to create portfolios, that exist the January effect and the high excess return in April and May, after the publication of financial situation, for the extreme portfolios. We can presume that the high excess returns from the months following the publication of financial situations are due to the companies' results that are higher than the investors' expectations. The January effect is negatively correlated with the company size and with the shares' trading volumes; the result is consistent with the conclusions from the scientific literature in the domain. December presents a negative correction, which provides premises for January effect.

6. Stability over time for results of monthly excess returns

The existence of an excess returns in some months from each year, considering the January effect or the effect post-publication of financial results for the previous year, is prove for informational inefficiency of the market and for the possibility of investors to obtain higher returns without assuming any additional risk.

But in order to consider as certain any of the two effects, one should follow their evolution over years. We will regard for the average daily excess returns for each month of each year considering two aspects: the average daily excess return for each month of a year and the magnitude of the average daily excess return for each month of the year as the difference between the average daily excess return of the first and fifth portfolios. The average daily excess return for each month should maintain its characteristics in all years in order to consider the effect as a permanent one.

Tables 5.a and 5.b present the average daily excess return for each month of the period between 2002 and 2010. The average daily excess returns for each month of the interval and for each year are also presented. The January effect can be sustained based on the average daily excess return for the entire interval and by analyzing each year independent; also there is in each year a higher average daily excess return in April and May.

Table 5.a

Evolution of the average daily excess return for each month of each year in period 2002 - 2010, the Pcb criteria for creating portfolios, t-statistic in brackets

	1	2	3	4	5	6	7	8	9	10	11	12	Total Year
2002	0.4852%	0.1570%	-0.2176%	1.0932%	0.7814%	0.0977%	-0.0323%	0.2858%	0.4571%	0.2734%	-0.0126%	-0.0624%	0.2818%
	(1.35)	(0.59)	(-0.31)	(1.38)	(1.84)	(0.57)	(-0.18)	(1.64)	(1.91)	(0.91)	(-0.06)	(-0.31)	(2.44)
2003	0.2907%	-0.1741%	-0.1005%	0.4036%	0.3163%	0.4154%	0.1937%	0.0885%	0.1170%	0.3972%	0.4436%	-0.1756%	0.1931%
	(0.99)	(-0.76)	(-0.70)	(1.17)	(1.09)	(2.73)	(1.35)	(0.64)	(0.88)	(2.13)	(2.76)	(-1.50)	(3.30)
2004	0.7928%	0.4144%	0.0987%	-0.1026%	0.3175%	0.5642%	0.6084%	0.2343%	0.3405%	0.3707%	0.5559%	-0.3765%	0.3280%
	(3.24)	(1.93)	(0.41)	(-0.38)	(1.25)	(3.51)	(2.45)	(1.51)	(2.00)	(2.26)	(4.18)	(-2.80)	(5.35)
2005	0.8164%	0.0359%	-0.4756%	-0.2445%	0.1979%	-0.3006%	-0.0200%	0.0400%	0.5004%	0.1863%	0.0679%	-0.0176%	0.0709%
	(3.30)	(0.09)	(-1.74)	(-0.96)	(0.99)	(-1.30)	(-0.08)	(0.19)	(2.89)	(1.03)	(0.46)	(-0.06)	(1.00)
2006	0.0746%	-0.0041%	0.1553%	0.2121%	1.4750%	-0.1463%	0.2154%	-0.0210%	0.1804%	0.5617%	0.5159%	0.4129%	0.3016%
	(0.34)	(-0.03)	(0.91)	(1.05)	(1.29)	(-0.81)	(1.51)	(-0.14)	(1.10)	(3.06)	(2.86)	(2.76)	(2.66)
2007	0.3081%	0.2759%	0.3304%	0.9440%	0.6717%	0.7491%	0.4948%	-0.0367%	-0.0415%	-0.0645%	-0.1555%	-0.0684%	0.2839%
	(2.00)	(1.57)	(1.51)	(5.53)	(3.77)	(4.14)	(2.20)	(-0.19)	(-0.31)	(-0.36)	(-0.66)	(-0.43)	(4.89)
2008	0.0390%	-0.0331%	-0.4068%	-0.3118%	0.3856%	-0.1276%	-0.1281%	-0.1233%	-0.4009%	-1.1298%	-0.4197%	-1.1155%	-0.3061%
	(0.21)	(-0.21)	(-2.24)	(-1.32)	(1.37)	(-0.60)	(-0.67)	(-0.54)	(-1.05)	(-2.38)	(-1.01)	(-3.58)	(-3.54)
2009	0.2197%	0.0374%	0.5586%	1.2119%	-0.5056%	0.1239%	-0.2169%	0.2091%	0.4827%	-0.3146%	-0.2745%	0.0287%	0.1328%
	(0.57)	(0.10)	(2.22)	(3.46)	(-2.63)	(0.85)	(-1.23)	(1.37)	(2.11)	(-1.56)	(-1.43)	(0.13)	(1.74)
2010	0.2741%	-0.0161%	0.6016%	0.2727%	-0.8086%	-0.1391%	0.2041%	-0.1464%	0.2850%	0.0403%	-0.1821%	0.1143%	0.0477%
	(1.67)	(-0.13)	(3.54)	(0.97)	(-2.35)	(-0.51)	(1.30)	(-0.89)	(1.44)	(0.22)	(-1.33)	(0.62)	(0.77)
Total month	0.3642%	0.0778%	0.0657%	0.3892%	0.3278%	0.1439%	0.1449%	0.0580%	0.2149%	0.0298%	0.0630%	-0.1510%	
	(4.23)	(0.96)	(0.65)	(2.95)	(1.99)	(2.12)	(2.22)	(0.98)	(2.93)	(0.33)	(0.86)	(-2.00)	

Table 5.b

Evolution of the average daily excess return for each month of each year in period 2002 - 2010,the Pv criteria for creating portfolios, t-statistic in brackets

	1	2	3	4	5	6	7	8	9	10	11	12	Total Year
2002	1.0229%	-0.0925%	-0.0088%	2.2625%	0.7392%	-0.1126%	-0.0076%	0.2135%	0.4384%	0.4707%	0.0694%	-0.1189%	0.4210%
	(2.21)	(-0.22)	(-0.01)	(1.21)	(1.65)	(-0.48)	(-0.03)	(1.05)	(1.67)	(1.08)	(0.29)	(-0.54)	(2.12)
2003	0.5322%	-0.0376%	-0.1077%	0.4140%	0.3250%	0.4292%	0.3269%	0.1156%	0.1669%	0.3923%	0.5701%	-0.2511%	0.2514%
	(1.24)	(-0.13)	(-0.63)	(1.18)	(0.97)	(1.83)	(1.50)	(0.80)	(0.72)	(1.62)	(2.69)	(-1.86)	(3.33)
2004	0.8949%	0.3685%	0.1227%	-0.1301%	0.3805%	0.6557%	0.6309%	0.2716%	0.4235%	0.4099%	0.7953%	-0.2665%	0.3894%
	(3.31)	(1.57)	(0.55)	(-0.51)	(1.26)	(4.39)	(2.71)	(1.56)	(1.77)	(1.82)	(4.28)	(-1.41)	(5.78)
2005	1.1295%	0.1246%	-0.4985%	-0.3670%	0.2061%	-0.2145%	-0.0369%	0.1389%	0.6505%	-0.1145%	-0.0115%	0.1092%	0.0960%
	(3.71)	(0.32)	(-1.66)	(-1.25)	(0.99)	(-0.73)	(-0.12)	(0.60)	(3.18)	(-0.43)	(-0.07)	(0.30)	(1.15)
2006	0.2102%	0.0423%	0.2239%	0.3263%	1.9869%	-0.1248%	0.4009%	-0.0068%	0.1927%	0.6544%	0.5719%	0.5024%	0.4149%
	(0.90)	(0.25)	(1.17)	(1.46)	(1.06)	(-0.57)	(1.97)	(-0.04)	(0.99)	(3.39)	(2.86)	(3.09)	(2.37)
2007	0.3219%	0.2930%	0.4194%	1.1292%	0.7700%	0.8120%	0.5396%	-0.0098%	-0.0501%	-0.0595%	-0.1578%	-0.0360%	0.3302%
	(1.89)	(1.50)	(1.80)	(6.07)	(3.86)	(4.01)	(2.22)	(-0.05)	(-0.39)	(-0.34)	(-0.66)	(-0.21)	(5.30)
2008	-0.0148%	-0.0035%	-0.4742%	-0.2979%	0.3600%	-0.0864%	-0.2897%	-0.0883%	-0.4547%	-1.2148%	-0.5523%	-1.3025%	-0.3582%
	(-0.07)	(-0.02)	(-2.34)	(-1.29)	(1.20)	(-0.38)	(-1.51)	(-0.36)	(-1.15)	(-2.34)	(-1.48)	(-4.70)	(-4.01)
2009	0.1263%	0.0069%	0.5138%	1.1167%	-0.5951%	0.1129%	-0.1688%	0.2374%	0.3886%	-0.2557%	-0.2489%	0.0589%	0.1108%
	(0.33)	(0.02)	(2.03)	(3.66)	(-3.18)	(0.73)	(-0.98)	(1.50)	(1.86)	(-1.27)	(-1.26)	(0.26)	(1.50)
2010	0.2939%	0.0386%	0.6169%	0.2937%	-0.9006%	-0.1850%	0.1603%	-0.1855%	0.5316%	0.0474%	-0.2276%	0.1412%	0.0583%
	(1.74)	(0.28)	(3.71)	(0.99)	(-2.42)	(-0.61)	(1.13)	(-1.06)	(2.09)	(0.25)	(-1.61)	(0.66)	(0.86)
Total month	0.4942%	0.0824%	0.0946%	0.5408%	0.3827%	0.1496%	0.1705%	0.0756%	0.2567%	0.0327%	0.0934%	-0.1400%	
	(4.80)	(0.90)	(0.94)	(2.20)	(1.57)	(1.89)	(2.29)	(1.17)	(3.06)	(0.31)	(1.18)	(-1.65)	

The magnitude of the average daily excess return considered as the difference between the average daily excess return for the first and the fifth portfolios, for each month of each year sustain for almost all months that the excess of return is negative correlated with the companies size and trading volume, and the results are consistent with data presented in Tables 4.a and 4.b. There are also presented the magnitude for each month of the entire interval and for each year.

Table 6.a

Magnitude of average daily excess return for period 2002 - 2010, the Pcb criteria for creating portfolios, t-statistic in brackets

	1	2	3	4	5	6	7	8	9	10	11	12	Total Year
2002	0.2380%	1.0926%	-0.1018%	3.8795%	1.0721%	0.2937%	0.2112%	-0.0213%	0.5697%	1.3561%	0.3970%	-0.2693%	0.7716%
	(0.26)	(0.90)	(-0.08)	(1.03)	(1.20)	(0.84)	(0.33)	(-0.04)	(1.07)	(0.90)	(0.86)	(-0.29)	(1.82)
2003	0.6949%	0.4597%	-0.3513%	-0.7219%	1.6024%	-0.0368%	0.7031%	-0.3353%	0.0591%	0.7456%	0.7426%	-0.2828%	0.3060%
	(0.56)	(0.69)	(-0.79)	(-0.78)	(1.34)	(-0.07)	(1.48)	(-0.67)	(0.10)	(1.28)	(1.23)	(-0.49)	(1.45)
2004	0.4306%	1.0346%	1.2061%	-0.9718%	0.7610%	0.4688%	0.8904%	0.5878%	0.8354%	0.7913%	0.8925%	-0.4892%	0.5603%
	(0.98)	(1.92)	(1.67)	(-1.21)	(0.76)	(0.78)	(1.54)	(1.05)	(2.71)	(1.40)	(1.68)	(-0.72)	(3.07)
2005	0.4322%	-0.6024%	-0.1862%	-0.7595%	0.2976%	-0.1141%	-0.5193%	0.7307%	0.2591%	0.9971%	0.1056%	-0.6903%	0.0276%
	(0.78)	(-0.77)	(-0.39)	(-1.34)	(0.30)	(-0.25)	(-0.55)	(0.99)	(0.46)	(1.21)	(0.21)	(-0.85)	(0.14)
2006	0.1752%	0.1611%	-0.1404%	0.7799%	6.7765%	0.7372%	0.9000%	-0.6431%	0.2879%	0.4396%	0.6289%	-0.0895%	0.8725%
	(0.34)	(0.32)	(-0.23)	(1.26)	(1.14)	(1.63)	(1.76)	(-1.44)	(0.61)	(1.13)	(0.97)	(-0.16)	(1.59)
2007	0.2637%	-0.2103%	0.9788%	-0.4192%	0.0252%	0.8097%	1.8294%	0.0586%	-0.1881%	-0.1872%	-0.2261%	0.1973%	0.2559%
	(0.82)	(-0.77)	(2.07)	(-1.07)	(0.05)	(1.67)	(2.74)	(0.18)	(-0.50)	(-0.74)	(-0.56)	(0.51)	(2.01)
2008	-0.0625%	0.3884%	0.4024%	0.4432%	0.3017%	-0.1712%	0.3057%	-0.2526%	-0.4853%	0.3034%	-0.8824%	-0.6170%	-0.0098%
	(-0.21)	(1.69)	(0.96)	(1.38)	(0.57)	(-0.33)	(0.70)	(-0.55)	(-0.87)	(0.52)	(-0.85)	(-0.58)	(-0.06)
2009	0.0427%	-0.0657%	0.5001%	-0.0435%	0.6034%	0.0004%	0.0738%	0.4059%	0.0283%	0.0274%	-0.1464%	-0.1272%	0.1117%
	(0.07)	(-0.11)	(1.09)	(-0.07)	(1.02)	(0.00)	(0.16)	(1.45)	(0.09)	(0.06)	(-0.32)	(-0.35)	(0.80)
2010	0.6580%	-0.2562%	0.6479%	0.4849%	-0.5206%	-0.4652%	-0.0627%	-0.4668%	0.7273%	-0.7441%	0.4070%	-0.0642%	0.0348%
	(1.52)	(-0.54)	(1.83)	(0.77)	(-0.76)	(-1.02)	(-0.13)	(-1.10)	(1.01)	(-1.24)	(0.81)	(-0.09)	(0.22)
Total mont	0.3175%	0.2220%	0.3347%	0.3535%	1.2539%	0.1743%	0.4875%	0.0088%	0.2349%	0.4182%	0.2200%	-0.2702%	
	(1.50)	(1.03)	(1.59)	(0.70)	(1.66)	(1.09)	(2.48)	(0.05)	(1.38)	(1.72)	(1.12)	(-1.15)	

Table 6.b

Magnitude of average daily excess return for period 2002 - 2010, the Pv criteria for creating portfolios, t-statistic in brackets

	1	2	3	4	5	6	7	8	9	10	11	12	Total Year
2002	3.9174%	-1.4373%	0.2360%	8.5452%	2.2239%	-0.9299%	0.1228%	-0.7583%	-0.4696%	2.2238%	1.2574%	-0.2490%	1.2699%
	(2.97)	(-0.83)	(0.22)	(0.96)	(3.25)	(-0.96)	(0.16)	(-1.64)	(-0.86)	(0.99)	(2.36)	(-0.37)	(1.46)
2003	2.1333%	0.4998%	-0.1417%	-0.2737%	1.2497%	-0.2206%	0.7107%	0.1957%	0.4610%	0.5270%	1.8014%	-0.9793%	0.5425%
	(1.22)	(0.63)	(-0.16)	(-0.25)	(1.02)	(-0.23)	(0.97)	(0.31)	(0.48)	(0.60)	(1.66)	(-1.19)	(1.85)
2004	2.0738%	0.6610%	1.0064%	-1.5235%	-0.0768%	1.4329%	0.4105%	0.5197%	0.3265%	1.5976%	1.6007%	0.4010%	0.7075%
	(2.00)	(0.93)	(2.51)	(-3.17)	(-0.13)	(1.88)	(0.54)	(1.10)	(0.58)	(2.41)	(2.52)	(0.38)	(3.52)
2005	2.4741%	0.3773%	-0.3334%	-1.7488%	0.8515%	0.4620%	0.4312%	1.2734%	0.9921%	-0.4277%	-0.6187%	0.2064%	0.3386%
	(2.21)	(0.53)	(-0.38)	(-1.34)	(0.75)	(0.56)	(0.44)	(1.67)	(1.46)	(-0.39)	(-0.77)	(0.17)	(1.21)
2006	1.1797%	0.6519%	0.3267%	0.2189%	9.3548%	0.7487%	1.9257%	-0.5791%	-0.0097%	1.3891%	0.6850%	2.3456%	1.5018%
	(1.67)	(1.16)	(0.49)	(0.39)	(0.97)	(0.95)	(1.70)	(-0.84)	(-0.01)	(2.88)	(1.22)	(3.70)	(1.71)
2007	0.1836%	0.8400%	1.2231%	2.9853%	1.1922%	1.8148%	1.1875%	0.4969%	-0.0802%	-0.1037%	-0.7944%	0.7759%	0.7854%
	(0.35)	(1.63)	(1.77)	(3.70)	(1.73)	(2.43)	(1.80)	(0.88)	(-0.18)	(-0.44)	(-1.74)	(2.29)	(4.47)
2008	-0.3338%	0.3403%	-0.5373%	0.0556%	-0.3957%	0.1726%	-1.0559%	-0.0644%	-0.9855%	0.0379%	-1.6444%	-1.6612%	-0.4807%
	(-0.53)	(1.28)	(-0.78)	(0.15)	(-0.46)	(0.26)	(-1.56)	(-0.12)	(-1.25)	(0.05)	(-1.94)	(-1.77)	(-2.43)
2009	-1.7100%	-0.3803%	0.2023%	-0.3826%	-0.5761%	-0.4067%	0.4455%	0.4181%	-0.3259%	0.3938%	-0.1052%	0.2935%	-0.1686%
	(-2.53)	(-0.38)	(0.39)	(-0.58)	(-0.95)	(-0.79)	(1.16)	(1.03)	(-0.93)	(0.94)	(-0.27)	(0.66)	(-1.05)
2010	0.5407%	0.0337%	0.7391%	0.3781%	-1.2496%	-0.9335%	-0.1326%	-0.5502%	2.2523%	-0.8076%	0.1695%	0.0602%	0.0525%
	(0.88)	(0.06)	(1.44)	(0.51)	(-1.52)	(-1.66)	(-0.27)	(-1.44)	(1.99)	(-1.26)	(0.30)	(0.07)	(0.26)
Total month	1.1255%	0.1754%	0.3118%	0.9922%	1.4655%	0.2433%	0.4359%	0.1090%	0.2484%	0.5457%	0.2618%	0.0866%	
	(3.28)	(0.62)	(1.31)	(0.89)	(1.24)	(0.94)	(1.73)	(0.57)	(0.99)	(1.61)	(1.12)	(0.30)	

The average daily excess return for January of each year are higher than the yearly average daily excess return, and the magnitude of average daily excess return for Januarys cover between 50% to 100% of the year magnitude of average daily excess return.

7. Persistency of January effect

Several studies in the international literature, such as Reinganum (1981) shows that shares have frequently excess returns in negative correlation with the company size; small companies obtaining monthly risk-adjusted excess returns higher then larger companies. The observation is consistent with results in tables 4.a and 4.b even if there are some exceptions in couple of months for portfolio 2. The null hypothesis considers that the portfolio return has a uniform distribution on all months of the year, without no differences between the excess return of the months. From the present paper till now we argument that months do not have an equal distribution of excess return between months.

Using the Augmented Dickey- Fuller (ADF) test we verify the existence of a unit root in order to determine the stationary of data. Testing autocorrelation and partial autocorrelation (tests AC and PAC) reveal stationary of data.

For testing the null hypothesis that considers equally excess returns between all months of a year, we use a function widely used in international scientific literature for this test. The average daily excess return of a specific month is considered as the average daily excess return of January and a difference of average daily excess return proper to the specific month.

The general regression function that defines the average daily excess return of a month is:

$$R_m^p = \sum_{\substack{p \in (1,5) \\ m \in (1,12)}} (a_m * DR_m^p) =$$

$$R_1^p + a_2 * DR_2^p + a_3 * DR_3^p + a_4 * DR_4^p + a_5 * DR_5^p + a_6 * DR_6^p + \qquad (4)$$

$$+ a_7 * DR_7^p + a_8 * DR_8^p + a_9 * DR_9^p + a_{10} * DR_{10}^p + a_{11} * DR_{11}^p + a_{12} * DR_{12}^p$$

where R_m^p is the average daily excess return for month m for portfolio p, $DR_m^p = R_1^p$ is average daily excess return for January for portfolio p, a_m represents a dummy that take value 1 for the month consider and value 0 otherwise (a_1 is always 1, being the coefficient for January to which are measured all other month). DR_m^p represents the difference between average daily excess return for the month considered and the average daily excess return for January. The difference of average daily excess returns DR_m^p for a specific month m is computed based on equally weighted sum of daily differences between excess return for day t from month m and excess return for day t from January:

$$DR_m^p = \frac{1}{n} \sum_{t=1}^{n} DR_{t(m)}^p = \frac{1}{n} \sum_{t=1}^{n} (R_{t(m)}^p - R_1^p) \qquad (5)$$

where $R_{t(m)}^p$ is the excess return for day t from month m for portfolio p.

Table 7.a

Evolution of the difference between average daily excess return for the month m and the average daily excess return for January, for Pcb criteria used to create portfolios (t-statistic in brackets)

	DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	Total DR
Pcb1	-0.2018% (-1.00)	-0.2343% (-1.36)	0.5300% (1.07)	0.7153% (0.96)	-0.2135% (-1.37)	-0.0202% (-0.12)	-0.2818% (-1.86)	-0.0639% (-0.39)	-0.0534% (-0.22)	-0.0454% (-0.26)	-0.7592% (-3.61)	-0.0454% (-0.48)
Pcb2	-0.4419% (-2.48)	-0.4508% (-2.40)	-0.4615% (-2.04)	-0.3590% (-2.11)	-0.3960% (-2.76)	-0.4411% (-3.28)	-0.7345% (-5.65)	-0.3919% (-2.81)	-0.6718% (-4.78)	-0.7877% (-5.34)	-0.8341% (-5.71)	-0.5376% (-11.09)
Pcb3	-0.3696% (-2.82)	-0.3431% (-2.33)	-0.0751% (-0.35)	-0.2841% (-2.13)	-0.2113% (-1.61)	-0.0677% (-0.57)	-0.3159% (-2.99)	-0.2527% (-2.28)	-0.4187% (-3.32)	-0.4464% (-3.73)	-0.4637% (-3.82)	-0.2920% (-7.13)
Pcb4	-0.3154% (-2.83)	-0.2492% (-1.92)	-0.3884% (-3.31)	-0.0483% (-0.35)	-0.1871% (-1.91)	-0.3605% (-3.60)	-0.2577% (-2.88)	-0.0800% (-0.70)	-0.3564% (-2.85)	-0.3167% (-2.97)	-0.3915% (-3.30)	-0.2654% (-7.67)
Pcb5	-0.1089% (-1.10)	-0.2472% (-1.41)	0.4864% (3.89)	-0.2200% (-2.20)	-0.0683% (-0.78)	-0.1903% (-2.12)	0.0296% (0.41)	0.0221% (0.25)	-0.1560% (-1.65)	0.0557% (0.58)	-0.1618% (-1.48)	-0.0513% (-1.58)
Total month	-1.4376% (-3.50)	-1.5246% (-2.92)	0.0915% (0.14)	-0.1961% (-0.24)	-1.0762% (-3.12)	-1.0799% (-3.26)	-1.5602% (-5.18)	-0.7665% (-2.11)	-1.6563% (-3.76)	-1.5404% (-4.18)	-2.6102% (-6.70)	

Table 7.b

Evolution of the difference between average daily excess return for the month m and the average daily excess return for January, for Pv criteria used to create portfolios (t-statistic in brackets)

	DR2	DR3	DR4	DR5	DR6	DR7	DR8	DR9	DR10	DR11	DR12	Total DR
Pv1	-1.1142% (-3.66)	-1.0082% (-4.00)	0.3369% (0.30)	0.1888% (0.16)	-0.8602% (-3.10)	-0.7129% (-2.75)	-1.0530% (-5.01)	-0.8236% (-3.14)	-0.8502% (-2.48)	-0.9158% (-4.00)	-1.1278% (-3.91)	-0.7207% (-4.43)
Pv2	-0.0865% (-0.47)	-0.1178% (-0.53)	-0.2719% (-1.19)	-0.3662% (-1.58)	-0.2476% (-1.53)	-0.3189% (-1.93)	-0.3732% (-2.91)	-0.0840% (-0.51)	-0.4234% (-2.33)	-0.2394% (-1.31)	-0.8402% (-4.10)	-0.2939% (-5.18)
Pv3	-0.4253% (-3.09)	-0.4929% (-3.34)	-0.3902% (-2.15)	-0.2195% (-1.60)	-0.4185% (-3.48)	-0.4114% (-3.34)	-0.5298% (-4.33)	-0.2577% (-2.15)	-0.5386% (-4.53)	-0.4637% (-3.98)	-0.7112% (-5.63)	-0.4366% (-10.88)
Pv4	-0.3149% (-3.36)	-0.2691% (-2.12)	0.0023% (0.02)	-0.0593% (-0.43)	-0.1934% (-2.63)	-0.1503% (-1.77)	-0.2204% (-3.47)	-0.1503% (-1.67)	-0.2740% (-2.86)	-0.4356% (-5.74)	-0.3472% (-3.66)	-0.2175% (-7.20)
Pv5	-0.1412% (-1.50)	-0.1609% (-1.31)	0.4985% (3.92)	-0.1279% (-1.38)	0.0247% (0.31)	-0.0172% (-0.25)	0.0190% (0.28)	0.0860% (1.08)	-0.2356% (-2.56)	-0.0094% (-0.12)	-0.1402% (-1.32)	-0.0185% (-0.65)
Total month	-2.0821% (-4.35)	-2.0488% (-3.81)	0.1756% (0.14)	-0.5840% (-0.48)	-1.6949% (-4.05)	-1.6108% (-4.14)	-2.1573% (-6.33)	-1.2296% (-2.94)	-2.3218% (-4.46)	-2.0639% (-5.19)	-3.1666% (-7.23)	

If the average daily excess return would be equally distributed in all months, then the values for differences DR_m^p would be null or almost null. From Tables 7.a and 7.b above there are confirmed the results obtained until now in the paper. The differences of average daily excess returns for all months and for all portfolios for both methods of constructing portfolios are in general negative and support the existence of January effect.

8. The financial crises and the January effect

Starting from year 2008 in world's financial markets a financial crises manifested, that extended then to affect the world's economies. Although the studied period includes three years of crises with effects even on economy of Romania and also on the Romanian capital market, related to the January effect one cannot observe modification in effect evolution.

If we go back to Tables 5.a and 5.b to analyze the monthly evolution of average daily excess return, there cannot be observe any abnormal or different evolution of January effect over the studied years. The crises period got a diminish in average daily excess return, but January effect maintained its higher returns relative to average daily excess return from the rest of the months of the year.

We can conclude that the January effect manifestation maintains in all years, no matter the economy or capital market situation, even if values are diminished during crises period. The average daily excess return from January is positive but the magnitude of the effect is lower during the crises years.

9. Discussion regarding the hypotheses of January effect

One of the most frequently used explanations in the scientific literature related to January effect is represented by massive sales of shares in December (or end of fiscal year) with losses in order to reduce the taxable income. Seeing the average daily excess return from December that is null or almost null, the explanation is plausible.

Another hypothesis is related to the period for publication of financial results of companies listed on stock exchange for the previous year. January is an uncertain month regarding the final results for the previous year, is a month with no concrete or complete information, a month of uncertainty and anticipation; so it is possible that the returns include some risk premium relative to the uncertain information. Also, for small companies or companies with limited transparence regarding the information released in market, it is normal that the excess return of these companies include some premium for risk considered higher. The informational hypothesis is supported also by the average daily excess returns from April and May, after the financial information is assimilated by the market.

10. Conclusion

The results obtained sustain the existence of an excess return manifested during the period analyzed on the capital market from Bucharest. The excess return is higher for small or infrequently traded companies, but a higher excess return is associated with a higher risk – a volatility of 4.1447% is associated to an excess return of 0.3624% for small companies relative to a volatility of 1.4553% for an excess return of 0.0384% for large companies.

The results also sustain the existence of January effect manifested through higher excess return for January in compare with the excess return of the other months. For both methods of computing portfolios – capitalization or trading volumes, the excess return in higher in January. Also the relation between the excess return and company size or liquidity are negative correlated – portfolios formed of small or infrequently traded companies have a higher excess return in compare with portfolios made from large or frequently traded companies.

The January effect is sustained also by the existence in December of a negative or low excess returns for all the portfolios created for both methods. Also, the individual analyze for each of the years included in the present study evidence the manifestation of January effects for all the years. In addition to the January effect, April and May also register high excess return, possible as following the publication of financial results of the companies (high excess returns were observed in April and May but the causes were not determined; there were presented references to other scientific papers that give a possible explanation).

The results obtained are consistent with results presented in scientific international papers and the hypothesis related to January effect causes from the international literature represents plausible explanation for Romanian capital market.

Acknowledgement

This article is a result of the project POSDRU/6/1.5/S/11 „Doctoral Program and PhD Students in the education research and innovation triangle". This project is co funded by European Social Fund through The Sectorial Operational Programme for Human Resources Development 2007-2013, coordinated by The Bucharest Academy of Economic Studies.

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